L7 ANSWER 3 OF 4 MEDLINE DUPLICATE 3
ACCESSION NUMBER: 97130228 MEDLINE
DOCUMENT NUMBER: 97130228 PubMed ID: 8976049
TITLE: Construction and characterization of the direct **piezoelectric** immunosensor for atrazine operating in solution.
AUTHOR: Steegborn C; Skladal P
CORPORATE SOURCE: Department of Biochemistry, Masaryk University, Brno, Czech Republic.
SOURCE: BIOSENSORS AND BIOELECTRONICS, (1997) 12 (1) 19-27. Journal code: 9001289. ISSN: 0956-5663.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199701
ENTRY DATE: Entered STN: 19970128
Last Updated on STN: 19990129
Entered Medline: 19970116

AB The direct immunosensor for determination of the herbicide atrazine was studied. The gold electrodes of the **piezoelectric** quartz crystal were silanized and activated using glutaraldehyde. The bioaffinity **ligand** atrazine was linked through albumin as a spacer molecule. The modified **piezoelectric** crystal was placed in a flow cell and all measurements were performed directly in flowing solution. The interaction of the anti atrazine monoclonal antibody (MAb, clone D6F3) with the immobilized atrazine was characterized using both crude ascitic fluid and Protein A-purified MAb preparates. The association and dissociation rate constants were determined, ka = 1.21 x 10(5) M-1S-1 and kd = 4.0 x 10(-4)S-1. The competitive determination of free atrazine was studied using different dilutions (100x, 250x and 1000x) of the ascitic fluid containing MAb. MAb was preincubated with atrazine (concentrations 0-1 microgram/l) for 15 min and the mixture was then introduced to the flow cell. As a signal, either the rate of frequency decrease or the relative change of frequency after the fixed binding period (10 min) was evaluated. As expected, the higher dilutions of MAb provided improved sensitivity for the analyte. For the 1000x diluted ascitic fluid, 0.1 and 1 microgram/l atrazine caused 5 and 30% decreases of the relative binding of MAb, respectively. Repeated use of the crystals was achieved using a 5 min flow of 100 mM NaOH for regeneration. The results obtained seem to be promising for determination of atrazine in drinking water using direct **piezoelectric** immunosensors.

L7 ANSWER 4 OF 4 MEDLINE DUPLICATE 4
ACCESSION NUMBER: 97051663 MEDLINE
DOCUMENT NUMBER: 97051663 PubMed ID: 8896324
TITLE: Activating **piezoelectric** crystal surface by silanization for microgravimetric immunobiosensor application.
AUTHOR: Suri C R; Mishra G C
CORPORATE SOURCE: Institute of Microbial Technology, Chandigarh, India.
SOURCE: BIOSENSORS AND BIOELECTRONICS, (1996) 11 (12) 1199-205. Journal code: 9001289. ISSN: 0956-5663.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199611
ENTRY DATE: Entered STN: 19961219
Last Updated on STN: 19990129
Entered Medline: 19961127

AB The development of a microgravimetric immunobiosensor using a **piezoelectric** quartz crystal as a detector requires a stable and

reproducible immobilization method for **ligand** binding. The method of silanization using 3-aminopropyltriethoxysilane (APTES) has been widely used for activating the carrier surface. In the present study, APTES deposition on a **piezoelectric** crystal surface was studied under various solvent conditions. A fluorescence method, using fluorescence isothiocyanate as a dye, was demonstrated for the quantification of amino groups on the silanized **piezoelectric** crystal surface. The optimum binding conditions of APTES deposition on a **piezoelectric** crystal surface were incorporated for the covalent immobilization of protein on the crystal surface in developing a stable and sensitive microgravimetric immunobiosensor. Determination of immunoglobulin G (IgG) concentration was performed using APTES modified **piezoelectric** crystals coated with protein G. The resonant frequency shift, resulting from the formation of protein G-IgG complex on the crystal surface, correlated with the concentration of IgG in the range 10 ng/ml to 0.1 mg/ml. The APTES modified, protein G coated crystal were found to be quite stable and did not show a significant loss of sensitivity even after 12 weeks of storage at 4 degrees C in a desiccator.